



# **Use of the NATA National Scale Assessment as a Scoping Tool for Urban-Scale Assessments**

*Dave Guinnup, Ted Palma, and Roy Smith*  
**OAQPS**

# Goals of the National-Scale Assessment

- ◆ Identify air toxics of greatest concern
- ◆ Characterize contributions of different emission sources to exposure and risk
- ◆ Prioritize collection of new data
- ◆ Provide a baseline (with ambient data) to track trends and measure progress against goals
- ◆ ***Assist in scoping local- and urban-scale assessments***
- ◆ By itself, the assessment is **NOT** being used as the basis for specific regulatory decisions

# Limitations of the National-Scale Assessment

- ◆ Inhalation exposure **only**
- ◆ Chronic exposures **only**
- ◆ 1996 emissions data **only**
- ◆ Sources of indoor origin **excluded**
- ◆ 50-km range
- ◆ Focuses on average/median exposures, not individual extremes
- ◆ Census tract-level calculations; county-level and higher presentations
- ◆ 32 urban HAPs & diesel PM

# Pollutants\* included in the Initial National-Scale Assessment

- ♦ acetaldehyde
- ♦ acrolein
- ♦ acrylonitrile
- ♦ arsenic compounds
- ♦ benzene
- ♦ beryllium compounds
- ♦ 1,3-butadiene
- ♦ cadmium compounds
- ♦ carbon tetrachloride
- ♦ chloroform
- ♦ chromium compounds
- ♦ coke oven emissions
- ♦ 1,2-dibromoethane (ethylene dibromide)
- ♦ 1,2-dichloropropane (propylene dichloride)
- ♦ 1,3-dichloropropene
- ♦ ethylene dichloride (1,2-dichloroethane)
- ♦ ethylene oxide
- ♦ formaldehyde
- ♦ hexachlorobenzene
- ♦ hydrazine
- ♦ lead compounds
- ♦ manganese compounds
- ♦ mercury compounds
- ♦ methylene chloride (dichloromethane)
- ♦ nickel compounds
- ♦ polychlorinated biphenyls (PCBs)
- ♦ polycyclic organic matter (POM)
- ♦ quinoline
- ♦ 1,1,2,2-tetrachloroethane
- ♦ tetrachloroethylene (perchloroethylene)
- ♦ trichloroethylene
- ♦ vinyl chloride
- ♦ diesel particulate matter

\*List based on the 33 urban HAPs. Dioxin, also an urban HAP, was not included because of inventory inconsistencies.

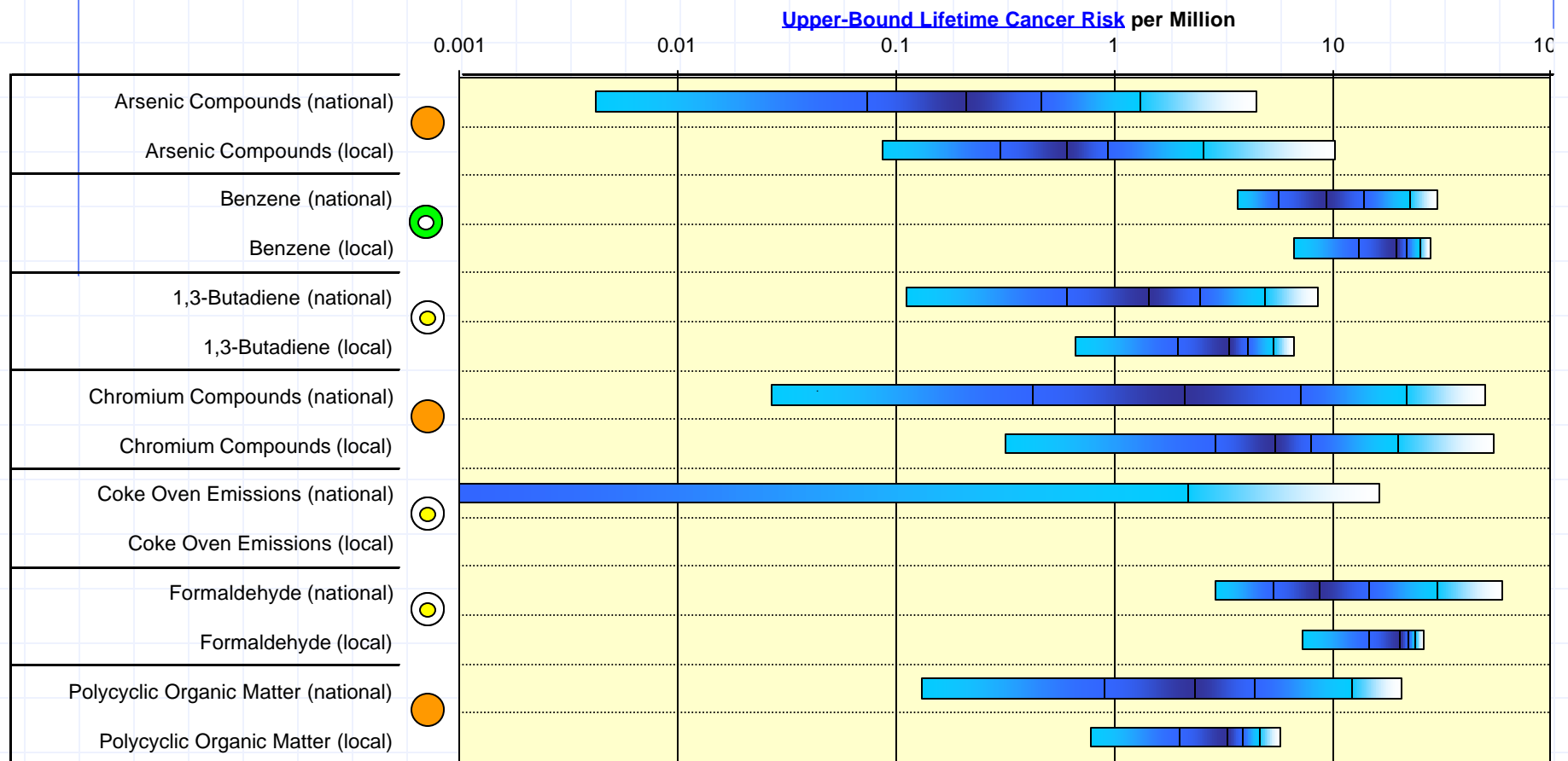
# National-Scale Assessment Results for Carcinogens

- ◆ National drivers<sup>1</sup> – Benzene, Chromium, Formaldehyde
- ◆ Regional drivers<sup>2</sup> – Arsenic, 1,3-Butadiene, Coke oven emissions, POM

<sup>1</sup> Risk > 10 in 1 million to 25 million people

<sup>2</sup> Risk > 10 in 1 million to 1 million people OR  
Risk > 100 in 1 million to 10,000 people

# Comparison of National- and Urban-Scale Cancer Risk from All Source Sectors

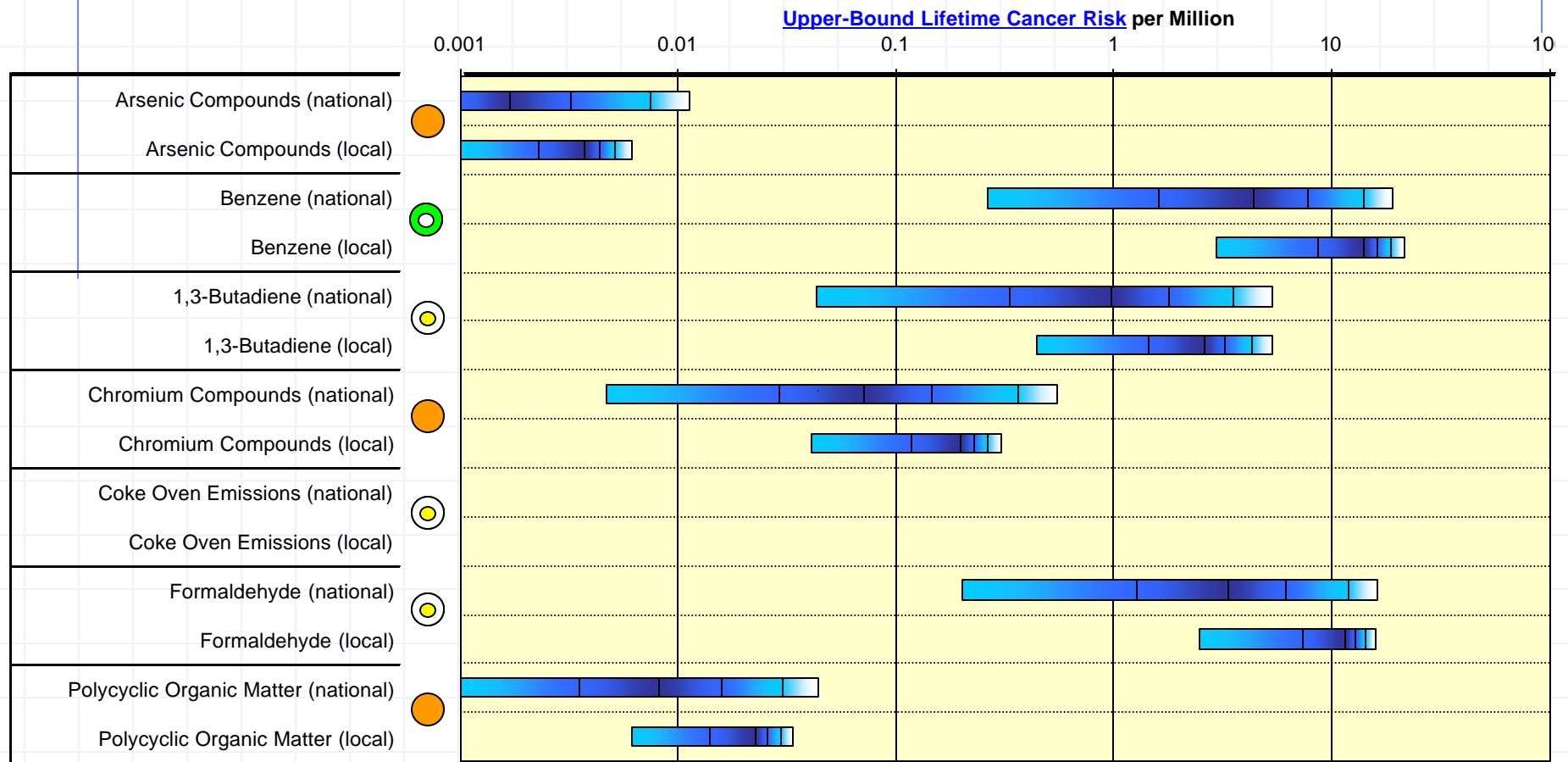


10/19/2001

DRAFT: Do not quote or distribute

6

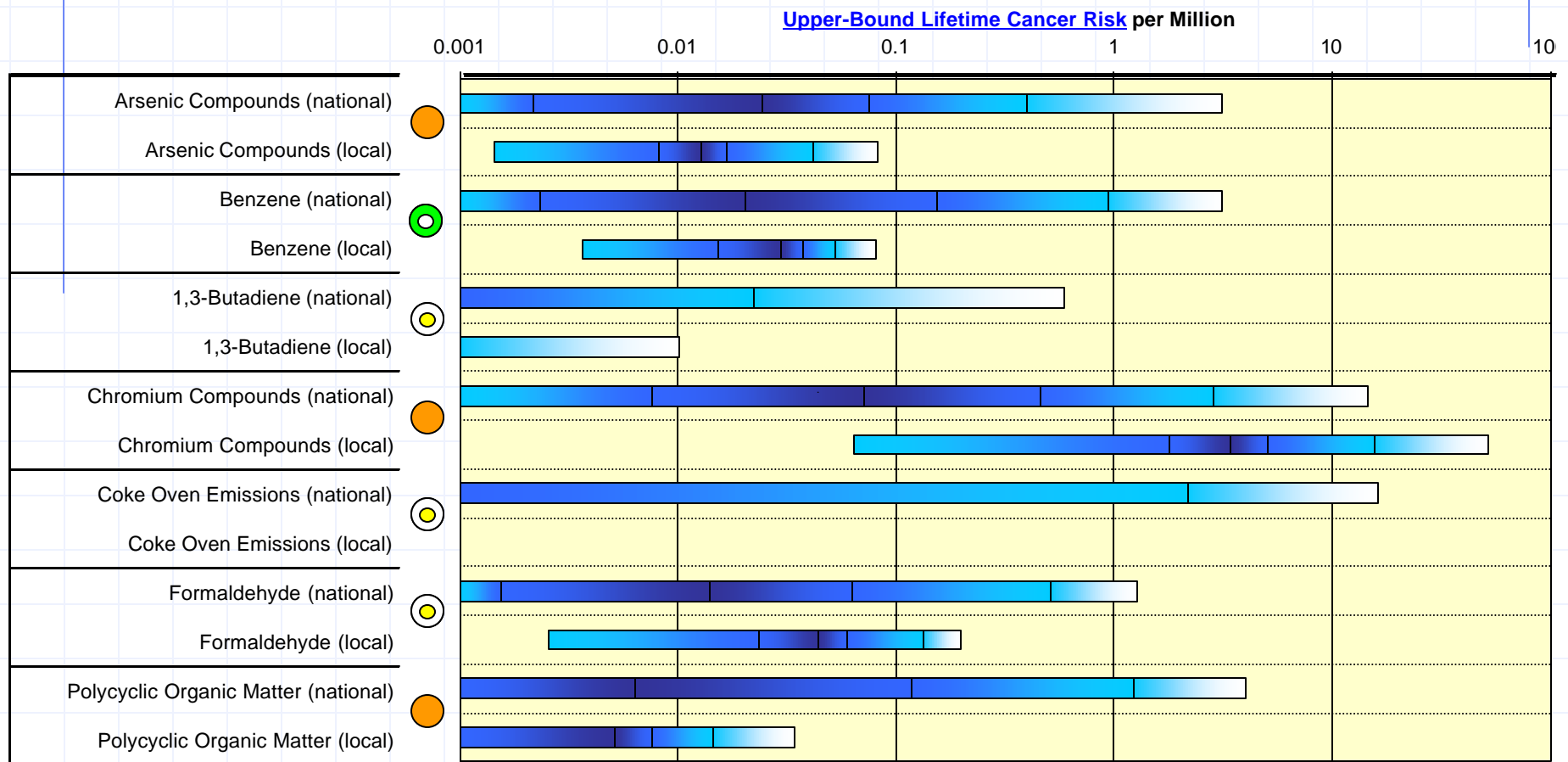
# Comparison of National- and Urban-Scale Cancer Risk from On-Road Mobile Sources



10/19/2001

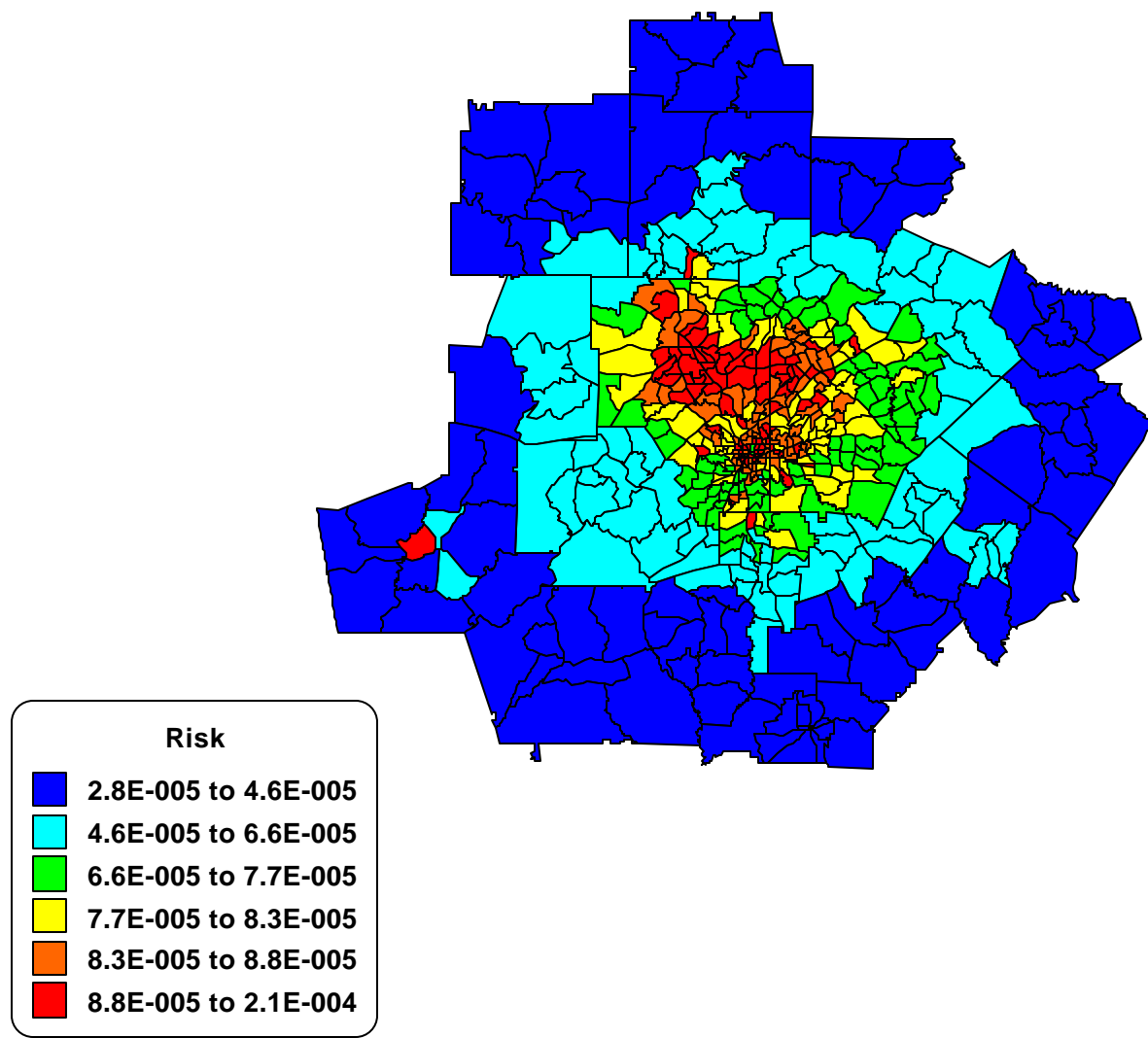
DRAFT: Do not quote or distribute

# Comparison of National- and Urban-Scale Cancer Risk from Major Sources

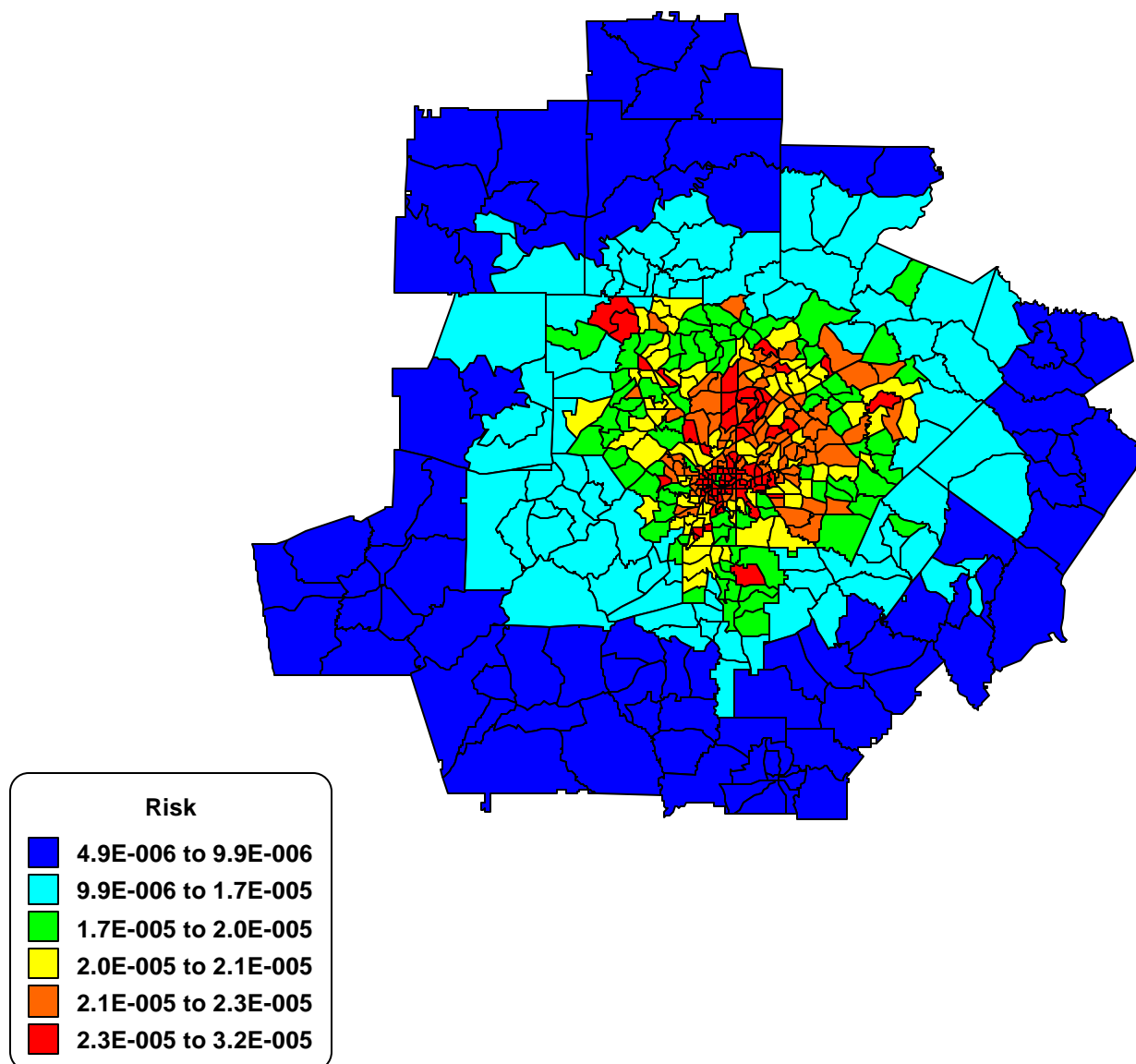




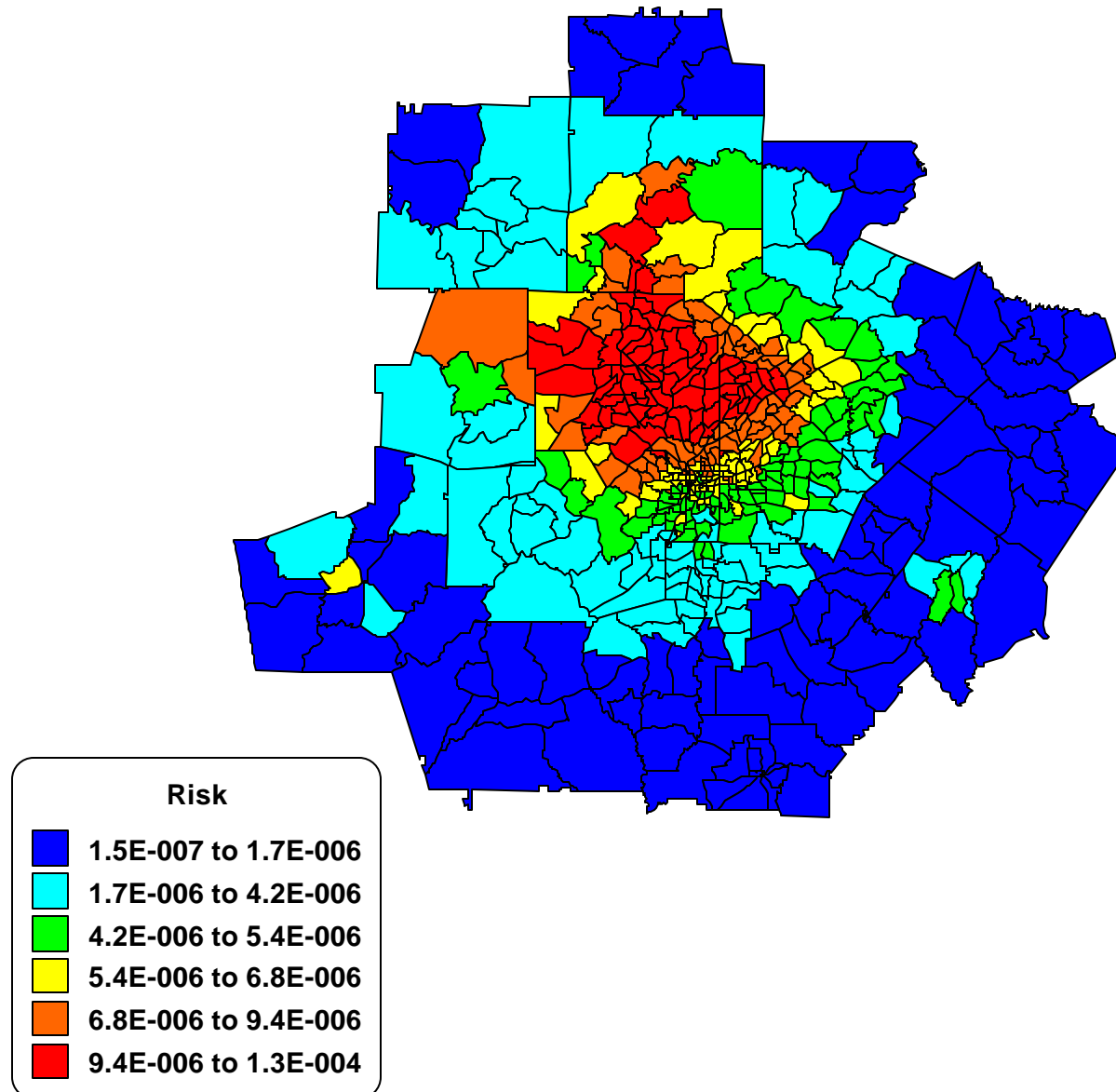
## Urban Area - Total Cancer Risk



# Urban Area - Benzene Risk



# Urban Area - Chromium Risk



# Summary

- ◆ Suggest local-scale focus on:
  - Benzene
    - ◆ Mobile sources -- center city
    - ◆ Stationary sources – target suburb hot spots
  - Chromium
    - ◆ Verify inventory data
    - ◆ Set goal to acquire speciated emissions and monitor data for Cr sources in northern suburbs

# Summary (cont'd)

- ◆ For a more complete scoping using the national-scale assmt.:
  - Prepare similar comparisons for all 33 HAPs
  - Focus on those whose 99<sup>th</sup> percentile for MSA reaches some threshold, e.g.  $1e-6$ 
    - ◆ Of special interest – HAPs whose local risks greatly exceed the national risks
  - Examine tract-level maps for patterns
  - Use results to develop
    - ◆ List of priority HAPs and sources
    - ◆ Monitor networks (including detection limits and chemical speciation needs)
    - ◆ Modeling strategies
- ◆ Note: EPA recommends that tract-level data be used only to identify patterns for further study. Data are not refined enough to support comparison among individual tracts.